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10/567,510	02/07/2006	Hideo Nagai	92478-9800	8521

52044 7590 04/27/2007  
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EXAMINER
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HO, HOANG QUAN TRAN

ART UNIT	PAPER NUMBER
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2818

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/567,510		NAGAI, HIDEO	
	<b>Examiner</b>		<b>Art Unit</b>	
	Hoang-Quan Ho		2818	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 and 29-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/7/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Species I for which claims 1 – 21 and 29 – 34 in the reply filed on January 22, 2007 is acknowledged. The traversal is on the ground(s) that Species II is a modification of Species I. This is not found persuasive because restriction by species require the distinction if they are patentably independent or distinct (see MPEP 806.04) as a burden. The fields of search for each patentably distinct invention are not coextensive. Each species require different and separate search strategies for their distinctiveness. Each patentable distinct species invention may have similar features, but do not share everything in common, therefore it is a burden to locate each different distinct features in each set of distinct claimed invention, a serious searching burden on the examiner. Thus, separate searches are required.

Should applicant traverse on the grounds that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

Because applicants have suggested that all pending claims of 1 – 21 and 29 – 34 read on Species I as elected, but also read on Species II as not elected, the examiner will attempt to withdraw claims that are applicable to Species II – IV as not elected.

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Upon initial reviewing of the elected claims, the examiner believes that claims 1 – 21 and 29 – 34 may all read on Species I, for which no other species' claims exist.

The requirement is still deemed proper and is therefore made FINAL.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on February 7, 2006 is being considered by the examiner.

### ***Claim Objections***

Claim 29 is objected to because of the following informalities: Oxygen in the formula  $\text{SiO}_4$  needs to be capitalized and should be seen like:  $\text{SiO}_4$ . Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "at substantially same thickness" in line 2. There is insufficient antecedent basis for this limitation in the claim. The examiner cannot understand what the limitation is comparing to in order to have substantially same thickness.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 2, 7 – 10, and 12 – 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lowery (European Patent App. Pub. No. 1 198 016 A2), hereinafter as Lowery.

Regarding claim 1, figs. 1 – 4 of Lowery teaches a semiconductor light emitting device (ref. no. 2A) comprising:

a base substrate (ref. nos. 4 or 16);

a multilayer epitaxial structure that includes a first conductive layer (ref. nos. 10 or 12), a second conductive layer (ref. nos. 12 or 10) and a light emitting layer (ref. no.

14) that is formed between the first conductive layer and the second conductive layer (as seen in fig. 4), the multilayer epitaxial structure being formed on the base substrate in such a manner that the first conductive layer is positioned closer to the base substrate than the second conductive layer is (as seen in fig. 4); and

a phosphor film (ref. no. 30A) that covers a main surface of the multilayer epitaxial structure which faces away from the base substrate, and every side surface of the multilayer epitaxial structure from a layer including the main surface to include at least the light emitting layer (as seen in fig. 4).

Regarding claim 2, Lowery teaches the semiconductor light emitting device of claim 1, wherein the multilayer epitaxial structure is epitaxially grown on the base substrate (see below).

Claim 2 is drawn to the process by which the product is made. Such product by process limitation does not structurally distinguish over the reference.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims

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or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 7, Lowery teaches the semiconductor light emitting device of claim 2, Lowery teaches the base substrate is made of one of SiC, AlN, GaN, BN, and Si (par. par. 0014).

Regarding claim 8, Lowery teaches the semiconductor light emitting device of claim 2, wherein the main surface of the multilayer epitaxial structure which faces away from the base substrate is uneven (as seen in fig. 4, where in ref. nos. 10, 12, and 14 are uneven with each other, such that they stack in a non-symmetric way) so as to improve light extraction efficiency (see below).

The recitation "so as to improve light extraction efficiency", refers to an operational limitation and any such limitation must distinguish from the prior art in terms of structure rather than function, *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding claim 9, Lowery teaches the semiconductor light emitting device of claim 2, Lowery teaches wherein light emitted from the light emitting layer has a

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wavelength component within a range of 380 nm to 780 nm (par. 0014).

Regarding claim 10, Lowery teaches the semiconductor light emitting device of claim 1, wherein the multilayer epitaxial structure is first epitaxially grown on a single-crystal substrate, and then transferred to the base substrate (see below).

Claim 10 is drawn to the process by which the product is made. Such product by process limitation does not structurally distinguish over the reference.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 12, Lowery teaches the semiconductor light emitting device of claim 10, wherein the first conductive layer is a p-type semiconductor layer, and the second conductive layer is an n-type semiconductor layer (par. 0013).



Regarding claim 13, Lowery teaches the semiconductor light emitting device of claim 12, wherein a main surface of the n-type semiconductor layer which faces away from the light emitting layer is uneven (as seen in fig. 4, where in ref. nos. 10, 12, and 14 are uneven with each other, such that they stack in a non-symmetric way) so as to improve light extraction efficiency (see below).

The recitation "so as to improve light extraction efficiency", refers to an operational limitation and any such limitation must distinguish from the prior art in terms of structure rather than function, *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Claims 1 – 3, 5 – 6, 11, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohtuka et al (WIPO Patent App. Pub. No. WO/058726 A1), hereinafter as Ohtuka.

Regarding claim 1, figs. 1, 7, 11, and 18 of Ohtuka teaches a semiconductor light emitting device (as seen in figs.) comprising:

a base substrate (ref. no. 3);

a multilayer epitaxial structure (ref. no. 10a – 10c) that includes a first conductive layer (ref. nos. 11a – 11c), a second conductive layer (ref. nos. 13a – 13c) and a light emitting layer (ref. nos. 12a – 12c) that is formed between the first conductive layer and

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the second conductive layer (as seen in figs.), the multilayer epitaxial structure being formed on the base substrate in such a manner that the first conductive layer is positioned closer to the base substrate than the second conductive layer is (as seen in figs.); and

a phosphor film (ref. no. 15a – 15c) that covers a main surface of the multilayer epitaxial structure which faces away from the base substrate (as seen in figs.), and every side surface of the multilayer epitaxial structure from a layer including the main surface to include at least the light emitting layer (as seen in figs.; Since the side surface is only ref. nos. 13a – 13c exposed, the ref. nos. 15a – 15c covers all surfaces of the ref. nos. 10a – 10c.).

Regarding claim 2, Ohtuka teaches the semiconductor light emitting device of claim 1, Ohtuka teach wherein the multilayer epitaxial structure is epitaxially grown on the base substrate (pg. 14, 3<sup>rd</sup> par. to pg. 15, ending of the continuous par. of previous pg.; also see below).

Claim 2 is drawn to the process by which the product is made. Such product by process limitation does not structurally distinguish over the reference.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product

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per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 3, Ohtuka teaches the semiconductor light emitting device of claim 2, Ohtuka teach wherein the multilayer epitaxial structure further includes a reflective layer (ref. nos. 9a – 9c) which is formed between the base substrate and the first conductive layer (as seen in figs.).

Regarding claim 5, Ohtuka teaches the semiconductor light emitting device of claim 2, Ohtuka teach further comprising:

a first electrode (ref. chars.  $Y_1 - Y_3$ ) that is formed on the first conductive layer (as seen in figs., where the first electrode is on the right side of each ref. nos. 11a – 11c);

a second electrode (ref. nos. 14a – 14c) that is formed on the second conductive layer (as seen in figs.);

a first power supply terminal (ref. nos. 16a – 16c of its first connection) and a second power supply terminal (ref. nos. 16a – 16c of its second connection) that are formed on a main surface of the base substrate which faces away from the multilayer epitaxial structure (as seen in figs.);

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a first conductive member (any of ref. chars.  $Y_1 - Y_3$ ) including a first through hole (any of ref. nos. 32a – 32c) that is provided in the base substrate (pg. 6, 1<sup>st</sup> par., the par. that is of continuation of previous pg. par.), and electrically connecting the first electrode and the first power supply terminal (as seen in figs.); and

a second conductive member (any of ref. chars.  $Y_1 - Y_3$ ) including a second through hole (any of ref. nos. 32a – 32c) that is provided in the base substrate (pg. 6, 1<sup>st</sup> par., the par. that is of continuation of previous pg. par.), and electrically connecting the second electrode and the second power supply terminal (as seen in figs.).

Regarding claim 6, Ohtuka teaches the semiconductor light emitting device of claim 5, wherein

the multilayer epitaxial structure is formed on the base substrate leaving a space along each edge of a main surface of the base substrate which faces the multilayer epitaxial structure (as seen in fig. 7 where ref. no. 4 is selectively pointing), and

the first through hole and the second through hole are provided in a peripheral portion of the base substrate, the peripheral portion corresponding to the space (as seen in fig. 11, ref. nos. 32a – 32c are provided in ref. nos. 19a – 19c, the same can be visualize in fig. 7 wherein there must be a space for the limited amount of LEDs provided in a row, therein lies the last through hole, e.g. ref. no. 32c of fig. 11).

Regarding claim 11, Ohtuka teaches the semiconductor light emitting device of claim 10, further comprising:

a metal reflective film (ref. nos. 9a – 9c) that is sandwiched between the multilayer epitaxial structure and the base substrate (as seen in figs.).

Regarding claim 34, Ohtuka teaches the semiconductor light emitting device of Claim 1 includes a hole (any of ref. nos. 32a – 32c) in the base substrate.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtuka as applied to respective claim 3, and further in view of Slater, JR. et al (U.S. Patent App. Pub. No. 2002/0123164 A1), hereinafter as Slater.

Regarding claim 4, Ohtuka and teaches the semiconductor light emitting device of claim 3, but Ohtuka does not explicitly teach wherein the reflective layer is made of an AlGaIn semiconductor. Slater teaches that it is known in the art to provide a reflective layer is made of an AlGaIn semiconductor (par. 0052). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Ohtuka with the AlGaIn reflecting material of Slater, in order to provide a reflective layer in a specific material to reflect light from the active region (par. 0052).

Claims 14 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtuka as applied to claim 1, and further in view of Schlereth (DE Patent App. Pub. No. 100 39 435 A1) and/or Nobuaki (Japan Patent App. Pub. No. 10-270801).

Regarding claim 14, Ohtuka teaches the semiconductor light emitting device of claim 1, but Ohtuka does not teach the claimed limitations of claim 14. However, Schlereth teaches wherein the multilayer epitaxial structure is shaped as a cylinder having a substantially circular (at least as seen in fig. 3, can also be seen in other figs.; par. 0057 – 0098) or Nobuaki teaches a N-sided polygonal cross-section, where N is an integer equal to or larger than five (at least as seen in drawing 1d, can also be seen in other figs.). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Ohtuka with the distinct shapes of Schlereth or Nobuaki, in order to improve light output and reduce threshold current (Nobuaki's abstract, improvement would just be of the same as Schlereth).

Regarding claim 15, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 14, wherein the phosphor film is applied at a substantially same thickness (as seen in figs.).

Regarding claim 16, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 14, Ohtuka teaches wherein the main

surface of the base substrate which faces the multilayer epitaxial structure is rectangular (as seen in fig. 2).

Regarding claim 17, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 14, Ohtuka teaches wherein the multilayer epitaxial structure further includes a light reflective layer (ref. nos. 9a – 9c) which is formed between the first conductive layer and the base substrate (as seen in fig. 1 of Ohtuka).

Regarding claim 18, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 14, Ohtuka teaches wherein the multilayer epitaxial structure is epitaxially grown on the base substrate (pg. 14, 3<sup>rd</sup> par. to pg. 15, ending of the continuous par. of previous pg.; also see below).

Claim 18 is drawn to the process by which the product is made. Such product by process limitation does not structurally distinguish over the reference.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new

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method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 19, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 14, Ohtuka teaches wherein the multilayer epitaxial structure is divided into a plurality of portions by a division groove (where ref. chars.  $Y_1 - Y_3$  points) that reaches the base substrate (as seen in figs.), the plurality of portions being a plurality of independent light emitting elements (as seen in figs., segmenting each individual LED as a - c).

Regarding claim 20, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 19, Ohtuka teaches wherein

in each of the plurality of independent light emitting elements,

a first electrode (ref. chars.  $Y_1 - Y_3$ ) is formed on a part of a main surface of the first conductive layer (as seen in figs., where the first electrode is on the right side of each ref. nos. 11a - 11c), the part being created by partially removing the second conductive layer and the light emitting layer (this is a product by process limitation as recited by "part being created by partially removing...", see similar rejection to claim 18 in respect to product by process), and a second electrode (ref. nos. 14a - 14c) is formed on a main surface of the second conductive layer (as seen in figs.), and



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the plurality of independent light emitting elements are connected with each other in series (ref. char. X1) in such a manner that a first electrode of one independent light emitting element is connected to a second electrode of another independent light emitting element using a wiring formed by a thin metal film (via ref. nos. 14a – 14c and ref. chars. Y<sub>1</sub> – Y<sub>3</sub> by ref. chars. 16a – 16c, as seen in fig. 1).

Regarding claim 21, Ohtuka and Schlereth or Nobuaki combined teaches the semiconductor light emitting device of claim 20, Ohtuka teaches wherein the light emitting layer included in each independent light emitting element has a substantially same area (as seen in figs.).

Claims 29 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowery or Ohtuka as applied to respective claims above, and further in view of Bokor et al (WIPO WO 02/11214 A1), hereinafter as Bokor.

Regarding claim 29, Lowery or Ohtuka teaches the semiconductor light emitting device of Claim 1, but Lowery does not explicitly teach wherein the phosphor film is formed of (Sr, Ba)<sub>2</sub> SiO<sub>4</sub>:Eu<sup>2+</sup>. Bokor teaches that it is known in the art to provide a phosphor (pg. 10, lines 18 – 24, pg. 11, table 4 and lines 1 – 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Lowery with the phosphor of Bokor, in order to provide white light mixing emission.

Regarding claim 30, Lowery or Ohtuka combined with Bokor teaches the semiconductor light emitting device of Claim 29, Lowery teaches wherein a thickness of the phosphor film is approximately 50  $\mu\text{m}$  (par. 0020).

Claims 31 – 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowery or Ohtuka as applied to respective claims above, and further in view of Camras et al (U.S. Patent App. Pub. No. 2002/0093023 A1), hereinafter as Camras.

Regarding claim 31, Lowery or Ohtuka teaches the semiconductor light emitting device of Claim 1, but both Lowery or Ohtuka does not explicitly teaches wherein the epitaxial structure has an uneven p-electrode surface as a first conductive layer. However, Camras teaches that it is known in the art to provide wherein the epitaxial structure has an uneven p-electrode surface as a first conductive layer (ref. no. 118; as seen in fig. 3A). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Lowery or Ohtuka with the electrode of Camras, in order to provide electrical contact to provide a voltage to the light emitting layer (par. 0037).

Regarding claim 32, Lowery or Ohtuka combined with Camras teaches the semiconductor light emitting device of Claim 31, Camras teaches wherein a plurality of

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depressions is formed on a surface of the p-electrode surface (as seen in fig. 3A) to improve light extraction efficiency (see below).

The recitation "so as to improve light extraction efficiency", refers to an operational limitation and any such limitation must distinguish from the prior art in terms of structure rather than function, *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding claim 33, Lowery or Ohtuka combined with Camras teaches the semiconductor light emitting device of Claim 31, Camras teaches wherein a Ni/An thin film (par. 0038) and an ITO transparent electrode (par. 0042, teaches that ref. no. 118 can also be of transparent, and ITO is widely known material in the art to use for transparent electrode, see Andriessen of U.S. Patent App. Pub. No. 2002/0153830 A1) from the p-electrode.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang-Quan Ho whose telephone number is (571) 272-8711. The examiner can normally be reached on Monday - Friday, 9 AM - 5 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HQH/  
Hoang-Quan Ho  
Junior Examiner  
April 13, 2007



Andy Nguyen  
Primary Examiner